

Application Serial No. 10/628,791
Reply to Office Action of May 23, 2008

PATENT
Docket: CU-5983

REMARKS / ARGUMENTS

Claims 3 and 22-28 are voluntarily canceled with this amendment; no other amendments to the claims are introduced herein.

In the present Office Action, the Examiner rejects pending claims 29-32 under 35 USC 103(a) as unpatentable over Mirick (US 3674729) in view of Roth (US 5889084) and Ishikawa (US 2003/0231226). Also, the Examiner rejects pending claims 29-32 under 35 USC 103(a) as unpatentable over Sharma (US 5480920) in view of Roth and Ishikawa.

In response, Applicant submits claims 29-32 are not obvious in view of these documents, as discussed further below. Applicant submits that the correction ink for a micro defect of a color pattern disclosed in claim 29 of the present invention is characterized in that the ink comprises a coloring agent, monomer having two or more reactivity functional groups in a molecule, diallylphthalate prepolymer and a solvent, wherein an amount of the solvent is from 25% by weight to 70% by weight of the whole ink and a viscosity of the ink is from 40 to 300 mPa-sec. A new protrusion is not generated when the ink is applied on a color omission portion of a white defect; the applied spot does not expand after applying to avoid having larger overlapped area on a normal portion of color pixels; physical stability like viscosity or the like of the ink at the time of preserving and using is excellent; a volume decrease rate of the applied ink is small; and it is able to sufficiently thicken a layer of the color omission portion after filling. As described in the "Description of the Related Art" section of the application, the correction does not succeed if the ink for forming small colored pattern is used without any change (see e.g. page 3 lines 11-18 of the English version of the application as filed).

Especially, the use of diallylphthalate prepolymer as polymer provides the advantage of improved heat-curability and electric properties to the correction ink for a micro defect of a color pattern disclosed in claim 29 of the present invention (see page 8 lines 23-26 of the application).

The correction ink for a micro defect in a colored pattern of the present invention contains, as well as polymer, monomer having two or more reactivity functional groups in a molecule also as a binder component. Since the ink contains such a monomer, once the ink is applied, the reactivity functional groups can be reacted with each other to make a network of the reactivity functional groups cross-

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linked to each other between molecules. Therefore, high cross-linking density can be obtained and satisfactory curability can be exhibited. In addition to having a function as a binder component to provide curability, the monomer of the present invention works as a component that can be substituted for a part of solvent. It also works as a component that can provide an effect to reduce a used amount of the solvent and that can adjust physical properties such as viscosity of the ink (see page 20 lines 1-22 of the application). Consequently, the correction ink of the present invention can improve the solvent resistance and heat resistance of a corrected portion and can provide a sufficient adhesive property to a substrate. Moreover, in the correction ink of the present invention, the monomer can be substituted for the solvent of the polymer. Therefore, it is possible to adjust physical properties regarding coating such as viscosity or the like in an appropriate range, and at the same time it is possible to adjust the quantity ratio of the coloring agent to the binder component in an appropriate range. Thus, sufficient coloring density can be obtained. (See page 6 line 15 to page 7 line 10).

The correction fluid composition of Mirick is, in contrast, a correction ink for use on paper and it is used by, before making a copy of an original or master, overcoating an erroneous portion of the original or master with the composition and drying the applied composition.

The correction fluid composition of Mirick is generally applied on an erroneous portion appropriately by hand, and it is subject to drying when used. Consequently, although quick-drying properties are required in applications of the invention of Mirick, it is not necessary to conduct a photocuring or thermosetting reaction by means of a light radiation apparatus or heating apparatus after drying since such procedures just can complicate the process of use. In fact, a non-reactive, film-forming polymer is used as a binder in Mirick. Considering the method for using the ink of Mirick, it is not expected to combine the correction ink of Mirick with the reactive monomer of the printing ink for an ink jet printing of Roth. Such a combination is rather unpreferable.

The correction fluid of Sharma et al. (hereafter, "Sharma") is also an ink which can be used to correct all types of markings (e.g. typewritten, handwritten and laser-jet printed), and is also subject to drying like Mirick. Thus, the points mentioned above regarding Mirick are also true of Sharma. The Examiner points out Sharma

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column 4 lines 15-24 as disclosing a polymerization inhibitor of the present invention, however, upon Applicant's review of such disclosure it appear that it is only mentioned that the correction fluids of the present invention "can include additives such as fillers, for example, talc which acts as a filler and leveling agent, clay, silica, fragrances, freeze-thaw stabilizers, dispersing agents, gums, leveling agents, chelating agents, colorants, dyes, pigments, defoamers, and the like normally used in correction fluids may be used if desired." That is, no polymerization inhibitor appears to be included in this statement.

The inks of Roth and Ishikawa et al. are for use in ink-jet printing. In ink-jet printing, inks are placed inside a printer for use. It is therefore possible to dispose a light irradiation device inside a printer to carry out light radiation after printing.

The Examiner also remarked that "Ishikawa et al. teaches that to get the high quality printed image, ink composition includes the dially(l)phthalate prepolymer." In connection with its ink, however, Ishikawa only mentions "allyl compounds such as ... diallylphthalate ..." as an example of the photocurable composition. Diallylphthalate monomer is mentioned herein; however, "diallylphthalate prepolymer" is not included. Moreover, in Ishikawa, diallylphthalate is just a part of the list of the photocurable composition, and neither diallylphthalate nor prepolymer is used in the Examples. Therefore, in Ishikawa, there is no suggestion to select diallylphthalate prepolymer at all. Further, from Ishikawa, one skilled in the art would not be taught that using, as a polymer, diallylphthalate prepolymer for the correction ink for a micro defect of a color pattern provides the advantage of improving heat-curability and electric properties.

At least in view of the foregoing discussion, Applicant submits that all the outstanding objections and rejections are overcome. Applicant respectfully submits that this application should now be in condition for allowance and respectfully requests favorable consideration.

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Date

Respectfully submitted,



Attorney for Applicant
Valerie Neymeyer-Tynkov, Reg. No. 46956
c/o Ladas & Parry LLP
224 South Michigan Avenue
Chicago, Illinois 60604
(312) 427-1300